

**In the United States Patent and Trademark Office**

Application No.: 10/613,126

Filing Date: 07/03/2003

Title: METHOD AND APPARATUS FOR  
AN ON CHIP VARIABLE ACUITY  
IMAGER WITH ROLL, PITCH AND  
YAW ANGLE RATES MEASUREMENT

Applicant(s): Massie, Mark Alan, et al.

Attorney Docket No.: N001 100077

Examiner: James M. Hannett

Art Unit: 2622

**Declaration Under 37 C.F.R. § 1.131**

I, Mark Alan Massie, a named inventor on Application Serial No. 10/613,126 (the "Application"), declare as follows:

1. The invention disclosed in Application was conceived prior to April 1999 as a portion of internal research and development conducted by myself and the joint inventors on the application at Nova Research, Inc. ("Nova"), the present assignee of the application.
2. On April 17, 1999 Christopher R. Baxter, a co-inventor on the Application, and I provided a White Paper entitled "Dynamically-Configurable, Dynamically Steerable Foveal Infrared Focal Plane Array" to the Air Force Research Laboratory, Eglin AFB which is attached hereto as Exhibit A (the "White Paper"). Individual paragraphs of the White Paper have been numbered sequentially for reference herein and the convenience of the Examiner.
3. A Phase I Small Business Innovation Research (SBIR) proposal under AF99-180 for a program for conceptual development that we internally referred to as the "Focal Geometric Array Study" (FGA Study) (the "Proposal") was submitted by Nova to the U.S. Air Force on January 8, 1999 and Nova was awarded a Phase I SBIR contract (Air Force Contract # F08630-99-C-0070) by June of 1999 and demonstrates substantial reduction to practice of the invention for a "fish eye" implementation of multiple FPAs employing the concepts disclosed in the White Paper. Relevant portions of the proposal are attached hereto as Exhibit B.

4. The combination of steps claimed for the present invention as defined in independent claim 1 and claims 2, 3 and 6 depending therefrom are disclosed in the White Paper.

5. Referring to the steps of the method of claim 1, “providing an X by Y array of detector elements” is described in paragraph 1 shown in Figure 1 of the White Paper which shows two configurations of “super pixel” arrangements of the XY array which is defined as an infrared focal plane array (FPA) in paragraph 1. The step of “identifying a predetermined feature” is discussed in the White Paper in paragraph 2 as the center of attention or COA. The steps of “examining the array elements for presence of the predetermined feature”; “defining a pixel set within a fovea associated with one or more elements of the array in which the predetermined feature is present” and “agglomerating elements outside of the fovea to create super pixels” are discussed in paragraph 2 of the White Paper and shown in Figure 1 which is substantially identical to FIGs. 1a and 1b of the Application. The steps of “reading a data value from each of the foveal pixels and super-pixels” and “analyzing the data values for temporal data content” are disclosed in paragraphs 3 and 9 of the paper as well as shown schematically in Figure 1.

6. Similarly, the steps of claim 2 “defining a charge sharing scheme”; “implementing the charge sharing scheme based on presence of the predetermined feature”; and “sharing charge between adjacent elements pursuant to the scheme” are all disclosed in paragraph 8 of the White Paper.

7. The additional continuing steps of claim 3, “determining a first region of first super-pixel sizes adjacent the fovea”; and “determining a second region of second super-pixel sizes adjacent the first region” are disclosed in paragraphs 7 and 8 as well as Figure 1 of the White Paper.

8. The additional continuing steps of claim 6 “recording the pixel agglomeration locations”; and “recreating pixel configuration data in the agglomerated condition” are disclosed in paragraph 9.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001

and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Executed on this 30<sup>th</sup> day of August, 2007 at Solvang, California by:

Mark A. Massie

Mark A. Massie

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**Exhibit A** White Paper entitled "Dynamically-Configurable, Dynamically Steerable Foveal Infrared Focal Plane Array"

Exhibit B Sections of "Focal Geometric Array Study" (FGA Study) submitted by Nova to the U.S. Air Force on January 8, 1999. Phase I SBIR contract (Air Force Contract # F08630-99-C-0070) awarded